
US 93/US 60 CORRIDOR PROFILE STUDY

NEVADA STATE LINE TO SR 303L

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Draft Working Paper 3: Corridor Performance Goals and Objectives

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LIST OF ABBREVIATIONS

ABBREVIATION	NAME		
AADT	Average Annual Daily Traffic	MP	Milepost
ADOT	Arizona Department of Transportation	MPD	Multimodal Planning Division
ARZC	Arizona & California Railroad	NACOG	Northern Arizona Council of Governments
ASLD	Arizona State Land Department	O-D	Origin-Destination
AZTDM	Arizona Travel Demand Model	P2P Link	Planning to Programming Link
BCA	Benefit Cost Analysis	PI	Pavement Index
BI	Bridge Index	POE	Port of Entry
BLM	Bureau of Land Management	PUD	Planned Development Unit
bqAZ	Building a Quality Arizona	PSR	Pavement Serviceability Rating
BNSF	BNSF Railway	PTI	Planning Time Index
CANAMEX	Canada to Mexico	SI	Safety Index
CR	Cracking Rating	SOV	Single Occupancy Vehicle
EB	Eastbound	SR	State Route
FAST	Fixing America’s Surface Transportation	SHSP	Strategic Highway Safety Plan
FHWA	Federal Highway Administration	SWAP	Arizona State Wildlife Action Plan
FI	Freight Index	TAC	Technical Advisory Committee
GA	General Aviation	TI	Traffic Interchange
I	Interstate	TTI	Travel Time Index
IRI	International Roughness Index	TPTI	Truck Planning Time Index
KART	Kingman Area Regional Transit	TTTI	Truck Travel Time Index
LCCA	Life-Cycle Cost Analysis	US	United States Route
LOS	Level of Service	V/C	Volume-to-Capacity
LRTP	Long-Range Transportation Plan	WB	Westbound
MAG	Maricopa Association of Governments	WACOG	Western Arizona Council of Governments
MAP-21	Moving Ahead for Progress in the 21st Century		
MI	Mobility Index		

1.1 Corridor Study Purpose

ADOT has instituted a new corridor planning approach to develop strategies and tools that incorporate life-cycle cost analysis and risk assessment to measure system performance. This Corridor Profile Study will follow the new process established by previous corridor profile studies for I-17, I-19 and I-40, to:

- Inventory past improvement recommendations.
- Define corridor goals and objectives.
- Assess existing performance based on quantifiable performance measures.
- Propose various solutions to improve corridor performance.
- Identify specific projects that can provide quantifiable benefits in relation to the performance measures.
- Prioritize projects for future implementation.

1.2 Corridor Study Goals and Objectives

The objective of this study is to identify a recommended set of potential projects for consideration in future construction programs, derived from a transparent, defensible, logical, and replicable process. The US 93/US 60 Corridor Profile Study will define solutions and improvements for US 93 and US 60 west of SR 303L that can be evaluated and ranked to determine which investments offer the greatest benefit to the corridor in terms of enhancing performance.

The following goals have been identified as the outcome of this study:

- Link project decision-making and investments on key corridors to strategic goals.
- Develop solutions that address identified corridor needs based on measured performance.
- Prioritize improvements that cost-effectively preserve, modernize, and expand transportation infrastructure.

1.3 Working Paper 3 Overview

The purpose of Working Paper # 3 is to establish the existing national, regional, and local context of the US 93/US 60 corridor, summarize the results of the corridor performance, and develop goals, emphasis areas, and objectives for the future of this corridor.

The framework is based upon the five performance areas used to characterize the health of the US 93/US 60 corridor: pavement, bridge, mobility, safety, and freight. The product of Working Paper 3 is the development of performance goals and objectives for US 93 and US 60 west of SR 303L against which baseline performance can be evaluated. Differences between baseline performance and performance goals and objectives provide the framework for defining corridor needs in the investment areas of preservation, modernization, and expansion.

1.4 Corridor Overview

The US 93/US 60 corridor provides a critical surface transportation link to Las Vegas from the Phoenix metropolitan area and the broader Central Arizona area. As a north-south US highway, US 93 continues through Nevada, Idaho, and Montana into Canada. Significant upgrades to both US 93 and US 60 have been accomplished in the past decade. US 93 has been upgraded to a

four-lane divided highway from Nevada to I-40 in Kingman and through most of its length from I-40 south to Wickenburg.

1.5 Study Location and Corridor Segments

The US 93/US 60 Corridor Profile Study limits extend from the Mike O'Callaghan–Pat Tillman Memorial Bridge at the Colorado River, which is the Arizona/Nevada State Line, to SR 303L in Surprise, Arizona, northwest of Phoenix. US 93 extends 200 miles south from the State Line to its junction with US 60 in Wickenburg, Arizona, at a roundabout on the west bank of the Hassayampa River.

The US 60 portion of the corridor extends from the roundabout over a new, four-lane bridge across the Hassayampa River a distance of approximately 28 miles south to SR 303L.

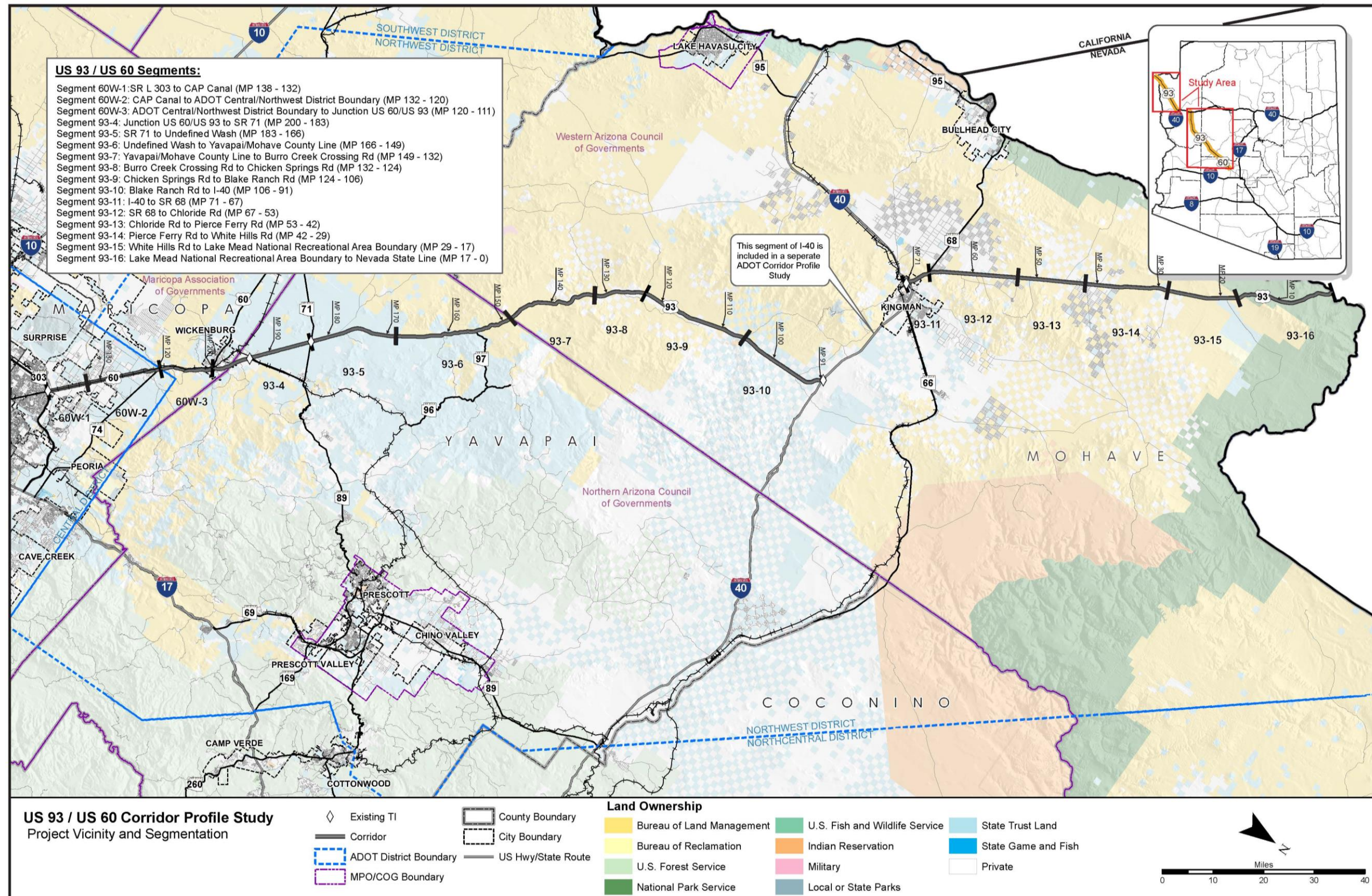
The 2015 Fixing America's Surface Transportation Act, or FAST Act, formally designated Interstate 11 (I-11) throughout Arizona. As part of that designation, a portion of I-11 will follow US 93 from Wickenburg to the Nevada state line. Identification of highway segments for study consideration was based on roadway, traffic, and jurisdictional characteristics to allow for the appropriate level of analysis for similar operating environments.

Sixteen segments have been identified. These segments area listed in **Table 1** and graphically depicted in map form in **Figure 2**.

Table 1: US 93/US 60 Corridor Segmentation

Segment	Route	Begin	End	Approximate Begin Milepost	Approximate End Milepost	Approximate Length	Thru Lanes	AADT	Character Description
60W-1	US 60	SR 303L	CAP Canal	138	132	6	2, 2	18,400	This 6-mile segment of US 60 is a four-lane, divided highway running west of and parallel to the BNSF Railway (BNSF) line.
60W-2	US 60	CAP Canal	ADOT Central/Northwest District Boundary	132	120	12	2, 2	8,325	This 12-mile segment of US 60 is primarily on an alluvial fan at the base of the Hieroglyphic Mountains. US 60 passes through Wittmann, Circle City and the city of Morristown at the junction with SR 74.
60W-3	US 60	ADOT Central/Northwest District Boundary	Jct US 60 /US 93 (Wickenburg)	120	111	9	2, 2	12,833	This 9-mile segment of US 60 parallels the east side of the Hassayampa River and there are no major developments for roughly seven miles.
93-4	US 93	Jct US 60/US 93 (Wickenburg)	SR 71	200	183	17	1, 1	8,975	This 17-mile segment of US 93 is a two-lane roadway with paved shoulders extending through Wickenburg and junctions with SR 71.
93-5	US 93	SR 71	Undefined Wash	183	166	17	2, 1 & 1, 1	5,700	This 17-mile segment of US 93 is a three-lane roadway with an auxiliary lane to accommodate WB-NB SR 71 traffic, then becomes a two-lane roadway with paved shoulders and passing lanes.
93-6	US 93	Undefined Wash	Yavapai/Mohave County Line	166	149	17	2, 2	5,700	This 17-mile segment of US 93 crosses the Santa Maria River at MP 161 and becomes a four-lane divided roadway at MP 168.
93-7	US 93	Yavapai/Mohave County Line	Burro Creek Crossing Road	149	132	17	2, 2	4,600	This 17-mile segment of US 93 is a four-lane, divided roadway with topography in this segment and includes the Yavapai – Mohave County Line.
93-8	US 93	Burro Creek Crossing Road	Chicken Springs Road	132	124	8	2, 2 & 1, 1	4,600	This 8-mile segment of US 93 transitions from a 4-lane divided highway to a two-lane road south of Chicken Springs Road, and transitions back to a 4-lane roadway with center left-turn lane.
93-9	US 93	Chicken Springs Road	Blake Ranch Road	124	106	18	2, 2 & 1, 1	4,600	This 18-mile segment of US 93 is a four-lane roadway with center left-turn lane and transitions back and forth from a two-lane roadway with paved shoulders to a four-lane, divided roadway.
93-10	US 93	Blake Ranch Road	I-40	106	91	15	2, 2	4,600	This 15-mile segment of US 93 junctions with SR 141 and SR 193 (Blake Ranch Road) approximately 4.5 miles south of I-40 and is a four-lane, divided highway, with a transition at the north end to a two-lane roadway with paved shoulders.
93-11	US 93	I-40	SR 68	71	67	4	2, 2	31,500	This 4-mile segment of US 93 is a four-lane roadway that becomes a divided highway approximately 2.6 miles I-40. Golden Valley is a large rural subdivision about 10 miles west of SR 68.
93-12	US 93	SR 68	Chloride Road	67	53	14	2, 2	8,850	This 14-mile segment of US 93 is a four-lane divided highway. The highway runs through the alluvial fan of the Cerbat Mountains to the east.
93-13	US 93	Chloride Road	Pierce Ferry Road	53	42	11	2, 2	8,000	This 11-mile segment of US 93 is a four-lane divided highway, entering the upper reaches of the valley formed by Detrital Wash.
93-14	US 93	Pierce Ferry Road	White Hills Road	42	29	13	2, 2	8,900	This 13-mile segment of US 93 is a four-lane divided highway with little to no development.
93-15	US 93	White Hills Road	Lake Mead National Recreation Area Boundary	29	17	12	2, 2	8,900	This 12-mile segment of US 93 continues as a four-lane divided highway to the Lake Mead National Recreation Area Boundary.
93-16	US 93	Lake Mead National Recreation Area Boundary	Nevada State Line	17	0	17	2, 2	8,900	This 17-mile segment of US 93 is a four-lane divided highway, with 2.3 miles of the roadway constructed as a four-lane roadway. The road was recently realigned near the border and connects with the Mike O'Callaghan–Pat Tillman Memorial Bridge.

Figure 2: Segmentation Map



2.0 CORRIDOR FUNCTIONALITY

This section provides an overview of how the corridor functions at the national and regional levels, as well as its relationship to local economies, major stakeholders, and multimodal opportunities.

2.1 National Context

The US 93/US 60 corridor is an integral part of the CANAMEX Trade Corridor, which is a High Priority Corridor as defined in the National Highway Systems Designation Act of 1995. US 93 is officially designated in the Act as a segment of the CANAMEX Corridor. US 60 is an interim route for the segment expected to link US 93 with I-10 to the south. Recent designation of a new I-11 as part of the Fixing America's Surface Transportation (FAST) Act, has provided the impetus to study that linkage and identify an official Interstate facility from Nogales through Arizona into Nevada, eventually connecting with I-80 in Utah and continuing to Canada. Current plans show I-11 connecting to US 93 in Wickenburg as a bypass route around the Phoenix metropolitan area to the west of Buckeye on the proposed Hassayampa Freeway. When the linkage is established, US 60 would no longer be considered a segment of the CANAMEX Corridor.

The CANAMEX Corridor Project has the key objective of creating a direct trade route from Canada to Mexico (thus CANAMEX) through the United States, which I-11 ultimately will satisfy. The corridor has been conceived as a means of easing freight movements between Canadian and Mexican terminals and providing an axial hub for intersecting trading routes that have become the backbone of transportation across the whole North American Continent. The initiative includes a rail freight component with the intent of also providing an advanced telecommunications infrastructure.

2.2 Regional Connectivity

The US 93/US 60 Corridor is Arizona's sole highway route through the northwestern portion of the state. There are three intersecting roadways that provide significant regional connectivity: I-40 in the Kingman area, which is the primary east-west route through Northern Arizona; SR 89 north of Wickenburg, which supports travel to Prescott; and SR 303 Loop at the northwestern edge of the Phoenix metropolitan area. Between Wickenburg and I-40, there are no connecting roadways to the east or west, and there is no alternative route of travel in the north-south direction. This also is true between Kingman and the Arizona/Nevada State Line.

Other State routes intersect, such as: SR 68, northwest of Wickenburg; SR 66 (Historic US 66) in Kingman; SR 97/96, which connects to the remote community of Hillside; SR 89, which connects US 93 and Wickenburg with Prescott; SR 71, north of Wickenburg that links SR 89 and US 60; US 60 (West) in Wickenburg, a lightly used route primarily supporting travel to small agricultural communities; and SR 74 south of Wickenburg, which connects with I-17. Although these routes provided regional connectivity, they also have a large component of local access to smaller Arizona communities.

Within the corridor are the City of Kingman and Town of Wickenburg. The City of Surprise, located on the northwestern edge of the Phoenix metropolitan area, is at the southern terminus of the corridor. Numerous small communities within the corridor depend on the highway to varying degrees for travel to essential services and for shopping opportunities, including: Dolan Springs, Chloride, Golden Valley, New Kingman-Butler, Wikieup, Hillside, Congress, Morristown, and Wittmann.

Total traffic volumes (average annual daily traffic [AADT] 2014) are approximately 8,000 to 13,000 throughout the length of the corridor, with the exception of US 60 immediately west of the SR 303L where daily volumes approach 19,000 and in the area of the US 93/I-40 interchange where daily volumes approach 32,000. The Arizona Travel Demand Model (AZTDM2) projects that traffic will more than double by 2035.

2.3 Commercial Truck Traffic

Commercial truck traffic is important to the economy of the US 93/US 60 Corridor, as this is the primary means of moving goods into and out of the various communities in the corridor. Although BNSF operates up to 100 trains a day through the City of Kingman and the BNSF and Arizona & California Railroad (ARZC) operate 13 per day through Wickenburg, these movements do not include drop shipments of consumer goods in the communities traversed. Commercial trucks account for the transport of all consumer goods to markets and stores in the corridor.

The share of commercial trucks on US 93 varies considerably. Directly south of the Arizona/Nevada State Line, commercial trucks account for 7.5 percent of traffic. This increases to 10.5 percent in the segment between Cerbat Road and SR 68 (the westward route to Golden Valley and Bullhead City). This segment is coincident with the State of Arizona Kingman Port of Entry (POE), which is directly south of the US 93/SR 68 Traffic Interchange (TI). A concentration of trucks queuing to pass through the POE likely accounts for the higher share of trucks represented in the traffic flow. South of SR 68 to I-40 the share of commercial trucks making up the traffic stream decreases to 7.8 percent.

Commercial trucks account for a very large share of traffic on I-40/US 93. Between Exit 48 on the west side of Kingman and Exit 71, where US 92 continues south through Round Valley, truck traffic reaches as high as 30 percent of all traffic the Interstate highway. It is lowest (18.2 percent) between the US 93 TI and Exit 48 and the Stockton Hill Road TI, approximately two miles to the east.

Trucks account for only 3.5 percent of the traffic heading south through Round Valley on US 93. Commercial trucks become a greater share of the highway's traffic south of Wikieup, increasing to 9.5 percent of traffic south of SR 97 to SR 71. The share of commercial trucks operating in the corridor increases to 11 percent south of SR 71 and peaks at 11.6 percent between SR 89 and Vulture Mine Road, which is just inside Yavapai County, north of Wickenburg. Within the Town of Wickenburg, truck traffic accounts for 9.5 percent of the traffic on US 93 to its junction with US 60.

Commercial trucks account for a smaller share of US 60 traffic south of Wickenburg. The share steadily increases from 6.6 percent directly east of the Hassayampa River crossing to 7.7 percent south of SR 74. The share of truck traffic peaks at eight percent at Patton Road in Surprise. This level of truck traffic is sustained to the end of the corridor at SR 303 Loop.

2.4 Commuter Traffic

The 2010-2014 American Community Survey maintained by the U.S. Census indicates that 95% of Kingman's employed residents worked within Mohave County. However, more than 35% of these persons worked outside of Kingman in another location. A similar relationship exists in Wickenburg, where approximately 94% of employed residents worked in Maricopa County, while more than 38% found employment outside of Wickenburg. In smaller Wikieup, 100% of the residents worked within Yavapai County, but slightly more than 6% found employment outside of Wikieup. Short of conducting an origin-destination (O-D) study, this information reveals there is a significant amount of

commuting practiced relative to the two largest communities in the US 93/US 60 Corridor. It is likely that some portion of a large number of commutes occurs in relation to the highway corridor, particularly relative to Wickenburg, which relies heavily on the Phoenix metropolitan area communities approximately 30 miles to the south for employment opportunities. Commutes out of Kingman likely are oriented to employment opportunities in Bullhead City, approximately 30 miles west of Kingman.

2.5 Recreation and Tourism

The US 93/US 60 Corridor provides access to Hoover Dam and the Lake Mead National Recreation Area at the northern end of the corridor, as well as some recreation and tourist attractions managed by Bureau of Land Management (BLM), including: Mt. Wilson Wilderness, south of Lake Mead; Willow Beach, south of Lake Mead on the Colorado River; Mt. Tipton Wilderness and the Packsaddle and Windy Point Recreation areas, northwest of Kingman; Historic Route 66, out of Kingman; Cerbat Foothills Recreation Area, in northwest Kingman; Wild Cow Springs Recreation Site, southeast of Kingman; Hualapai Mountain Resort, southeast of Kingman; Burro Creek Recreation Site and Campground, south of Wikieup; Grapevine Mesa/Joshua Tree Forest, a National Natural Landmark; Arrastra Mountain and Tres Alamos wilderness areas, south of Wikieup; Sophie’s Flat Trail System, northeast of Wickenburg; and the Vulture Peak and Vulture Peak Trail, south of Wickenburg.

2.6 Multimodal Uses

The statewide emphasis is to create a multimodal transportation system. This means that, while the safety and mobility of the State’s residents via motor vehicles will remain a primary concern, the overall focus will be widened to include greater attention to all relevant modes of travel, including public transit, bicycle, pedestrian, truck freight, rail freight and passenger service. This section provides a review of the status these latter modes of transportation in the US 93/US 60 Corridor.

2.6.1 Freight Rail

There are two active railroad services with lines in the US 93/US 60 Corridor: BNSF and ARZC. The BNSF line runs out of Phoenix, generally parallel with US 60, to a point northwest of Wickenburg at Matthie, where it turns toward the community of Congress, paralleling SR 89. North of Congress, the line, known as the “Pea Vine” for its winding path through the mountains, continues to Williams, Arizona, where it connects with the BNSF main east west interstate line. The BNSF Railway operates multiple freight trains daily on this main line through Kingman at the north end of the US 93/US 60 Corridor.

The ARZC connects with BNSF Phoenix Subdivision “Pea Vine” line northeast of Wickenburg. This strictly is a transportation connection; no freight handling services occur at this junction. The ARZC continues south from Matthie, operating with trackage rights on the BNSF Phoenix Subdivision.

2.6.2 Passenger Rail

Amtrak operates daily passenger rail service (i.e., one train per day) – Southwest Chief – through Kingman in each direction with a scheduled stop at the Kingman Station. The Southwest Chief provides connections to Los Angeles, California, on the West Coast, and Chicago, Illinois, in the Midwest. Shuttle services connect Amtrak rail passenger service at Kingman with Laughlin and Las Vegas, Nevada.

2.6.3 Bicycles/Pedestrians

The ADOT Bicycle and Pedestrian Plan Update (June 2013) provides some information regarding conditions relevant to bicyclists in the US 93/US 60 Corridor:

- A large portion of the roadway miles forming the US 93/US 60 Corridor has an effective shoulder width of four feet or greater. Sections with an effective shoulder width less than four feet make up approximately 25 percent of the corridor. The Plan identifies the need to widen the shoulders for a distance of 16 miles south of the Arizona/Nevada State Line to the Lake Mead National Recreation Area boundary. In addition, there is an opportunity for establishing south of this point a paved shoulder on US 93 (southbound) between MP 17.3 and MP 58.5. Also, identified by the Plan is a short segment that offers an opportunity on US 60 south of Wickenburg to establish paved shoulders of four feet or greater between MP 110 and MP 112.
- The segment of US 93 south of the Arizona/Nevada State Line through Kingman along I-40 and the segment of US 93/US 60 from Wickenburg to SR 303 Loop in Surprise are identified as having “High Traffic Volumes.” The remainder of the corridor is identified as having “Medium Traffic Volumes.”
- SR 66 from I-40/US 93 to Armour Avenue, an area with extensive commercial development and a truck stop, is identified as a “High Priority Segment” for consideration of improvements due to the number of bicycle-involved crashes.

The ADOT Bicycle Safety Action Plan (September 2012) identifies concern for bicyclists, including those related to the US 93 US 60 Corridor:

- The intersection of Stockton Hill Road at I-40/US 93 is identified as a Focus Area, due to the relatively high number of bicycle crashes.
- The SR 66 segment identified above – I-40/US 93 to Armour Avenue – is identified as a Focus Area “Priority Location.”
- The presence of rumble strips in the shoulders and speeding vehicles north of Wickenburg on US 93.
- US 60 from I-17 to Wickenburg, which has “worn out paving.” This would include the portion of the US 60 between Wickenburg and SR 303 Loop.

The Kingman Area Transportation Study Update (February 2011) asserts that bicycle and pedestrian facilities are an integral part of a multimodal transportation network. Goals and recommended improvements provided with this Study support appropriate facilities and services intersecting the I-40/US 93. The Study states that new urban street design and construction actions include improvements to accommodate bicycle and pedestrian travel, including:

- Continuous sidewalks and bicycle lanes.
- Comfortable pedestrian and bicycle access to shopping, schools, and other activity centers.
- Pedestrian facilities that meet ADA requirements.

The Town of Wickenburg, worked with ADOT to acquire and preserve on of two old US 60 bridges that crossed the Hassayampa River, when the new four-lane bridge was constructed to the north. The old bridge, which was not longer suitable for vehicle traffic, essentially has been renovated to be aesthetically pleasing and safe for bicycle and pedestrian travel. Other improvements associated

with this segment of the corridor include: improving the shoulders of US 60 south to the SR 303 Loop with connections provided to SR 74.

2.6.4 Bus/Transit

There are no regular public transit services operating in the US 93/US 60 Corridor with the exception of Kingman Area Regional Transit (KART), which provides public transportation services in and around the Kingman community. There are three public transportation companies that provide, primarily for recreation, passenger transportation between the Phoenix and Las Vegas metropolitan areas through the US 93/US 60 Corridor: Tufesa, EPLA Limo Express, and Goto Bus. Trips take five to eight hours, usually with a stop in Kingman.

2.6.5 Aviation

The Kingman Airport supported commercial air service in the past; however, it currently does not have a passenger-carrying airline operating through the airport. In addition to the Kingman Airport, there are numerous small General Aviation (GA) airports near the US 93/US 60 Corridor, including: Triangle Airpark, a small residential airpark with paved runway adjacent to US 93 south of Willow Beach Road; Lake Mohave Ranchos Airport, a small dirt strip east of US 93 on Pierce Ferry Road in Dolan Springs; unnamed paved airstrip on US 93 at Milepost (MP) 174, north of Date Creek; Moreton Airpark, a small, residential community/airpark (dirt strips) northwest of Wickenburg above Matthie Junction; Wickenburg Municipal Airport, west of Wickenburg on the north side of US 60 (West); Rio Vista Hills Airport, a small, residential airpark (paved strip) southeast of Wickenburg on the east side of US 60; Ranta/Ad Strip, a small, private airport west of Morristown; Castle Well, a dedicated residential airpark northeast of Morristown.

2.7 Traveler Amenities

No rest areas are located along this corridor. North of Wickenburg on US 93, drivers can take advantage of several unofficial turnouts.

2.8 Tribes

The Hualapai Tribe is the only federally recognized tribal community in northwestern Arizona along the US 93/US 60 corridor. Based on the 2000 census, the total population of the Hualapai Reservation is 1,620, of whom 1,353 are tribal members. The reservation covers approximately one million acres along 108 miles of the Grand Canyon and Colorado River, throughout three counties: Coconino, Yavapai, and Mohave. There is no casino gaming on the reservation, and tribal enterprise consists of big-game hunting permits, and the Grand Canyon West at the west rim of the Grand Canyon. As a sovereign Indian nation, the Tribe is governed by an executive and judicial branch.

2.9 Jurisdictions, Population Centers, and Major Traffic Generators

As shown in the previously referenced **Figure 2**, the US 93/US 60 Corridor traverses multiple jurisdictions in three Arizona counties: Mohave, Yavapai, and Maricopa. Land ownership is divided through the corridor between the National Park Service, Arizona State Land Department (ASLD), BLM, and private holdings. US 93 is within the Lake Mead National Recreation Area under the jurisdiction of the National Park Service for approximately 16 miles. At MP 17, the highway enters land held by the BLM, which traverses the distance to Kingman, passing in and out of parcels held variously by the BLM, ASLD under a State Trust, and private owners.

South of I-40, US 93 passes through (intersects) four one-mile square State Trust land parcels before running south for approximately nine miles through a privately-owned corridor. Three miles beyond the end of this corridor, the highway passes through land held in private ownership and continues into Yavapai County for approximately 45 miles. For the next ten miles ASLD land abuts the highway on the east side, and the highway passes through one ASLD land parcel. Beyond this point to just before the intersection with SR 89, the highway passes through ASLD land. ASLD land is not encountered again until north of Morristown. South of Morristown, the highway passes through (intersects) several ASLD parcels before reaching Wittmann.

The BLM holds ownership/control over most of the corridor south of the Lake Mead National Recreation Area boundary and Kingman. In addition to various ASLD parcels, there are square-mile parcel of privately-held land straddling the right-of-way. Sixteen miles south of the ASLD parcels south of I-40, the highway has BLM land on both sides and generally remains within BLM land into Yavapai County. In the area where ASLD land abuts the highway on the east side, BLM land abuts the highway on the west side. The highway corridor does not interfere with BLM land further south, except for a very small area between MP 116 and MP 117.

2.9.1 Population Centers

There are three major population centers within the US 93/US 60 Corridor: City of Kingman, Town of Wickenburg, and the community of Wittmann. North of Kingman there are two principally rural residential communities that rely on US 93 for regional travel: Dolan Springs and Golden Valley. The City of Kingman has a population of more than 29,000 (2015); it is the principal commercial and social zone for this northern portion of US 93. **Table 2** shows current (2015) population by county and city along with projected future (2040) population growth.

Table 2: Current and Future Population

Area	2010 Population	2015 Population	2040 Population	% Change 2010-2040	Total Growth
Maricopa County	3,824,100	4,063,700	6,174,800	61.5%	2,350,700
Surprise	117,700	126,700	280,500	138.3%	162,800
Wickenburg (Part)	6,400	7,000	15,700	145.3%	9,300
Unincorporated	273,700	292,100	608,500	122.3%	334,800
Yavapai County	211,033	220,774	321,924	52.5%	110,891
Wickenburg (part)	0	18	7	2.1%	7
Unincorporated	83,782	88,851	46,341	16.3%	6,498
Mohave County	160,646	169,643	255,830	59.3%	95,184
Kingman	28,068	29,693	45,042	60.5%	16,974
Unincorporated	75,230	80,944	133,587	77.6%	58,537

Source: U.S. Source: Census, Arizona Department of Administration – Employment and Population Statistics

South of I-40, although an area of roughly 15 square miles has been subdivided for residential development around US 93, there are only two named communities south to Wickenburg: Wikieup with a population of approximately 300 and Nothing, AZ. The latter essentially is a truck stop or way

station. SR 97 provides access the community of Hillside, approximately 28 road miles to the east and southeast of US 93. Hillside is a very small community that relies on US 93 for regional access. It was originally founded around a mining operation, and it had early interaction with the BNSF Phoenix Subdivision – the Pea Vine, which included two spurs and siding to serve the community. Although there are permanent residents there today, to many it is consider a ghost town.

US 93 terminates in Wickenburg, which has a population of more than 6,600. Wickenburg is the primary commercial and social zone for southwestern Yavapai County and northern Maricopa County. South of Wickenburg, approximately 11 miles, is the small community of Morristown (population 227 in 2010), which is located on the east side of US 60. Approximately four miles further south is the unique community of Circle City, with a population of just over 1,400, which is located on the west side of US 60. Approximately four miles south of Circle City, the community of Wittmann straddles US 60, the core of which is contained within a square-mile section of land. The Wittmann community, with a population of 6,700 in 2010, and is part of a 16-square-mile area northwest of Surprise that has a number of large-lot, rural subdivisions. Speedworld Raceway Park northwest of Surprise put on races throughout the year, which add to the traffic load on US 60 north of SR 303L.

2.9.2 Major Traffic Generators

Kingman and Wickenburg are the largest traffic generators within the US 93/US 60 corridor. US 60, west of Wickenburg, supports travel to the Wickenburg Municipal Airport and the communities of Aguila and Salome. The junction for US 93 and US 60 at one time was in the center of Wickenburg. This junction has since been moved east to the edge of the Hassayampa River, where a new, four-lane bridge was recently constructed. Wickenburg sponsors several annual events, which attract a large amount of traffic that puts pressure on the river crossing.

The City of Surprise, with a population exceeding 123,000 (2013) has a major influence on the level of traffic operating on US 60 north of SR 303 Loop. Medium density housing for retired persons flanks the US 60/SR 303 Loop interchange and major new planned-unit developments (PUDs) are underway along North 163rd Avenue north of the interchange.

2.10 Wildlife Linkages Consideration

The Arizona Game and Fish Department published the Arizona State Wildlife Action Plan (SWAP) in 2010. This SWAP provides a 10-year vision for achievement, subject to adaptive management and improvement along the way. The plan covers the entire state, identifying wildlife and habitats in need of conservation, insight regarding the stressors to those resources, and suggests actions that can be taken to alleviate those stressors. Wildlife linages and habitat zones are shown in **Figure 3**.

Using the Habimap Tool™ (<http://www.habimap.org/>), which creates an interactive database of the information included in the SWAP, the following were identified in relation to the US 93/US 60 corridor:

- Wildlife waters are located along both sides of US 93 from Wickenburg to Kingman.
- US 93 and US 60 travel through Arizona State Land Department allotments from SR 303L to the Nevada State Line.

- The US 93/US 60 corridor crosses through potential linkage zones and Arizona Missing Linkages from Morristown north through Wickenburg. US 93 continues through potential linkage zones for the majority of the way to Kingman. There is one isolated potential linkage zone on US 93 north of Kingman.
- Amphibian distributions along the corridor include Lowland Leopard Frog and Northern Leopard Frog, with a population of Relict Leopard Frog on US 93 near the state line.
- Species and Habitat Conservation Guide indicates riparian areas along US 60 south and north of Wickenburg, and US 93 south and north of Wikieup.
- Species of Greatest Conservation Need are identified continuously along the corridor between SR 303L and the Nevada State line, ranging from low to high, with the highest concentrations near Kingman.
- A high level of Species of Economic and Recreational Importance are identified southwest of the Kingman area. A low level is identified throughout the US 93 corridor north of Kingman to the Nevada State Line.
- There are three wildlife overpasses on US 93 for big horn sheep crossings. They are located at approximately MP 12.2, MP 5.1, and MP 3.3. The Arizona Game and Fish Department monitors big horn sheep travel through numerous video and still cameras along this stretch of the corridor.

2.11 Transportation Assets

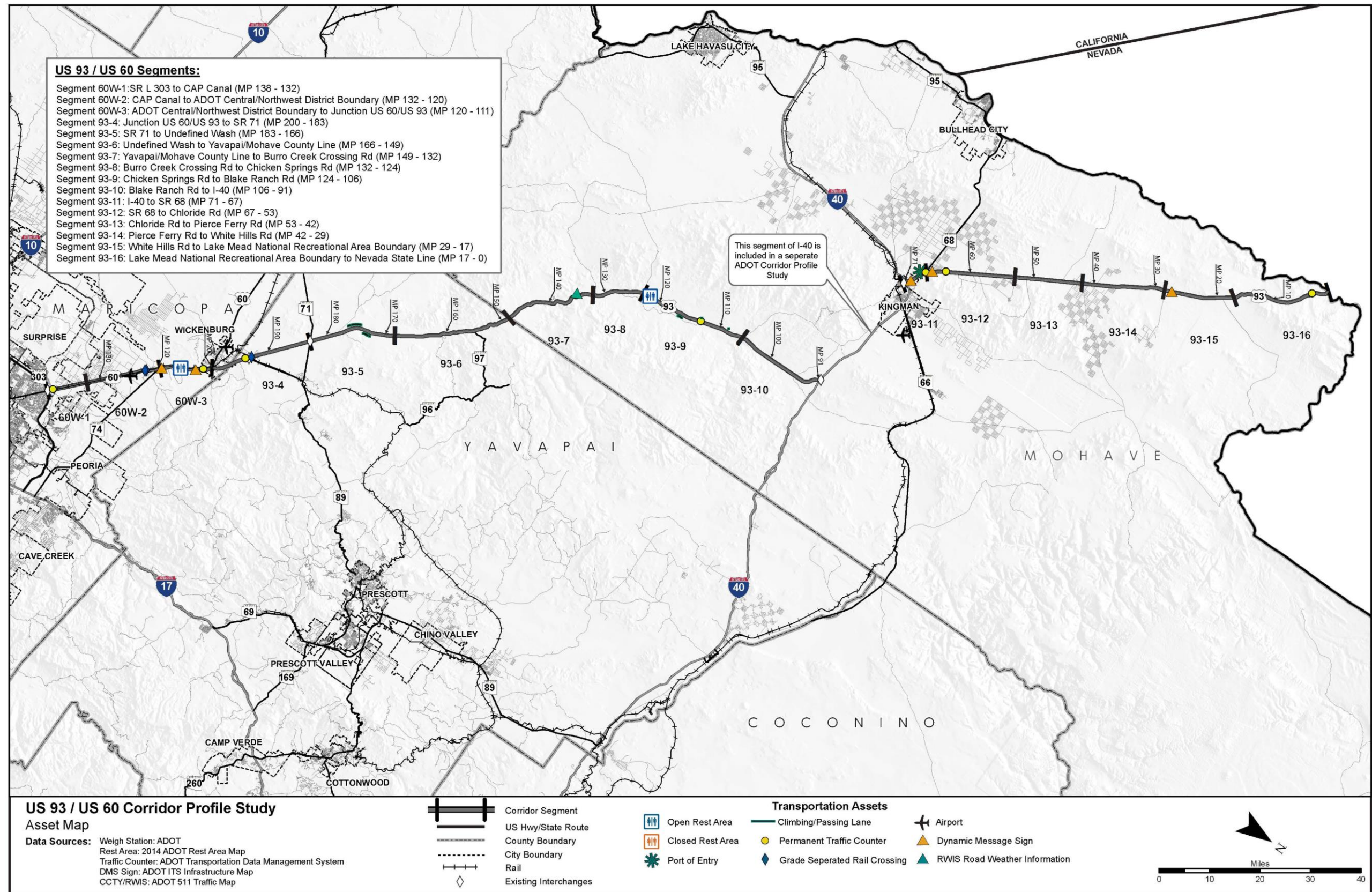
Corridor transportation assets are summarized in **Figure 3**. The corridor has six TIs located at:

- US 93/Kingman Wash Access Road, directly southeast of the Arizona/Nevada State Line.
- US 93/SR 68, northwest of Kingman.
- I-40/US 93, approximately 23 miles east of Kingman.
- US 93/SR 71, north of Wickenburg.
- US 93/SR 89, north of Wickenburg.
- US 60/SR 303 Loop in Surprise (the southern terminus of the corridor).

There are three roundabouts on US 93 in Wickenburg at Wickenburg Ranch Way, Tegner Street, and Junction US 60.

A freight weigh station is located near the New Mexico border just outside of Kingman, Arizona. There are three grade separated road crossings on the corridor. Two are located south of Morristown, one for the eastbound and one for the westbound direction. The third grade separated road crossing is located north of Wickenburg. There are seven permanent traffic counters located along the US 93/US 60 corridor. Two counters are located on US 60, and the remaining five are located along the US 93 portion of the corridor. **Figure 4** shows the locations of 14 airports located within 10 miles of the corridor, including Wickenburg Municipal Airport.

Figure 3: Transportation Assets



2.12 Conclusion of Corridor Characteristics

The US 93/US 60 Corridor provides a direct connection between Central Arizona and the State's largest metropolitan area with northwestern Arizona and the State of Nevada. The US 93 portion is a segment of the CANAMEX Corridor, which currently is connected to I-10 via US 60 near the center of Phoenix. With ultimate construction of the newly designated I-11, a through route will be created between the Arizona/Mexico International Border at Nogales and the Arizona/Nevada State Line with connectivity to I-15 and points north. The corridor functions as a route for international commerce, agricultural, recreational, tourist, and regional traffic. The US 93/US 60 Corridor is viable and is often used as travel corridor to Las Vegas as an alternate to I-17/I-40 through Flagstaff.

Although multimodal travel options are very limited along this corridor, continued expansion of Wickenburg and Kingman, as well as the growth of Surprise at the southern end will result in more demand for public transportation and convenient, safe bicycle and pedestrian facilities. Although potentially two decades in the future, the completion of I-11 directly connecting I-10 with US 93 will make the US 60 portion of the corridor an even more important regional facility than it is currently. Full development of US 93 as an Interstate highway will mean that it will take on a greater and greater role in the movement of international commerce and interstate travel with access to the I-10 travel corridor.

3.0 SUMMARY OF CORRIDOR PERFORMANCE

A system to establish baseline corridor performance was developed through a collaborative process with ADOT, the Technical Advisory Committee (TAC) and the Corridor Teams for the profile studies. Baseline performance was evaluated using primary and secondary performance measures to define the corridor health. Corridor needs constitute the difference in baseline corridor performance compared to performance objectives.

The performance system consists of five areas: Pavement, Bridge, Mobility, Safety, and Freight. For each of these performance areas, a primary measure – known as the Index – was defined along with a set of secondary measures that allows for a more detailed analysis of corridor performance. **Table 3** lists the primary and secondary measures that were evaluated for each of the five performance areas.

Working Paper 2 evaluated the overall corridor performance (as a weighted average by segment length) and individual segment performance in the five aforementioned areas. The primary and secondary performance measures were quantified where feasible. A scale for each measure was developed based on adopted ADOT thresholds, where applicable, or on statistical analysis of statewide datasets. The scaling is split into three levels, each of which is represented by a corresponding color. The scale levels are named “good” (green), “fair” (yellow), and “poor” (red), except that for measures based on a comparison to statewide averages (e.g., the Safety performance area) where the levels are called “above average” (green), “average” (yellow), and “below average” (red). Some of the secondary measures are “hot spots” that cannot be readily quantified at a segment or overall corridor level, so no scaling was developed for “hot spots”.

Good/Above Average Performance
Fair/Average Performance
Poor/Below Average Performance

The corridor weighted average ratings are summarized in **Figure 4**, which also provides a brief description of each performance measure. **Figure 5** shows the corridor and segment performance for each primary measure. The following sub-sections summarize the measured performance in each performance area according to the analysis findings documented in Working Paper 2.

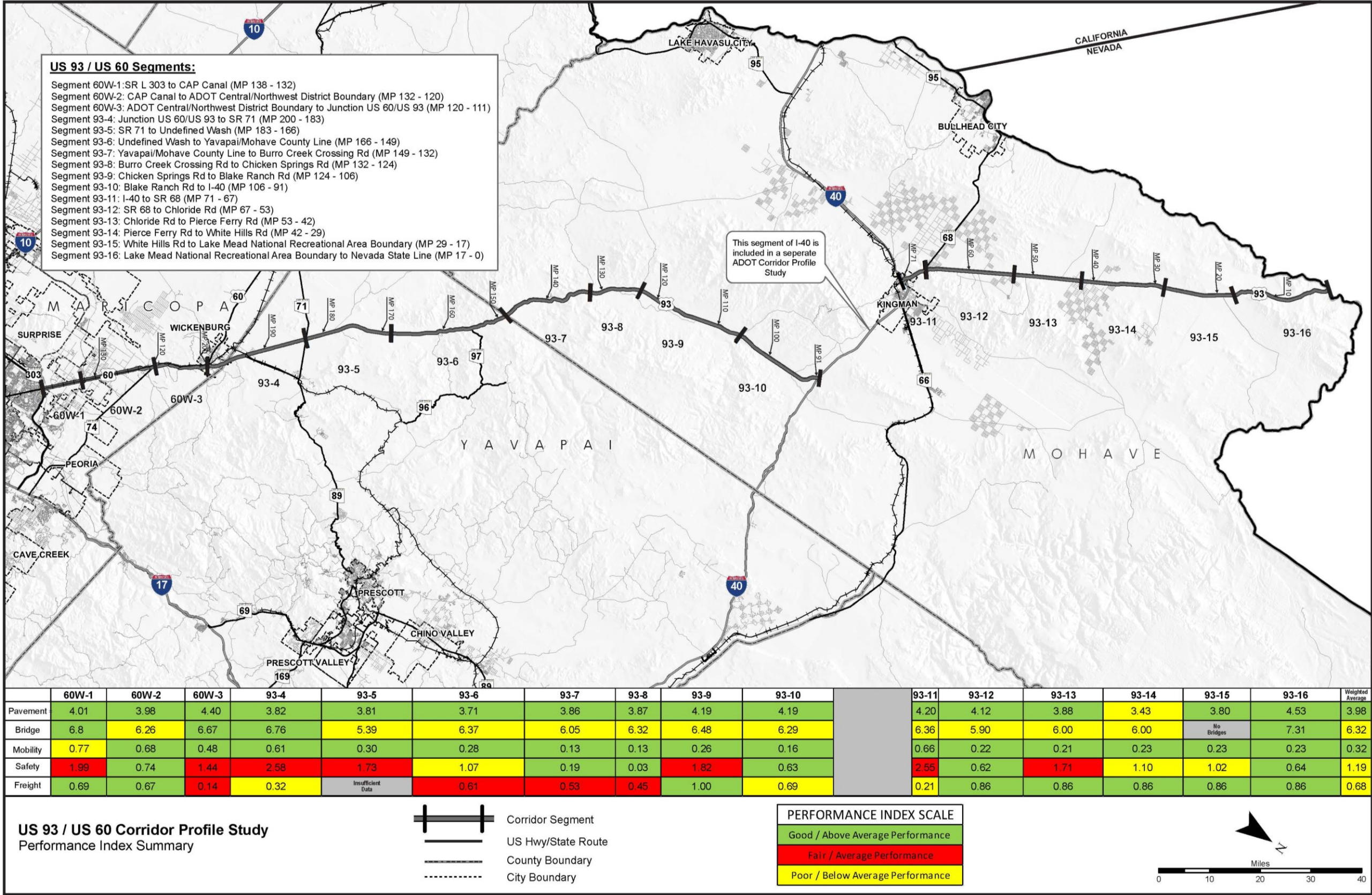
Table 3: Performance Measures

Performance Index	Primary Measure	Secondary Measures
Pavement	Pavement Index (based on a combination of International Roughness Index and Cracking)	<ul style="list-style-type: none"> Directional Pavement Serviceability Pavement Area Failure Pavement Hot Spots
Bridge	Bridge Index (based on Deck Rating, Substructure Rating, Superstructure Rating, and Structural Evaluation Rating)	<ul style="list-style-type: none"> Bridge Sufficiency Rating Functionally Obsolete Lowest Bridge Rating Bridge Hot Spots
Mobility	Mobility Index (based on combination of Current V/C and Future V/C)	<ul style="list-style-type: none"> Existing Directional Peak Hour Volume/Capacity Future Volume/Capacity Directional Travel Time Index Directional Planning Time Index Road Closure Frequency Percent Non-SOV Trips Bicycle Accommodation
Safety	Safety Index (based on frequency of fatal and incapacitating injury crashes)	<ul style="list-style-type: none"> Percent Strategic Highway Safety Plan Emphasis Areas Crash Unit Types Directional Safety Index Safety Hot Spots
Freight	Freight Index (based on Truck Planning Time Index)	<ul style="list-style-type: none"> Directional Truck Travel Time Index (TTTI) Directional Truck Planning Time Index (TPTI) Road Closure Duration Clearance Restrictions

Figure 4: Performance Summary

Pavement	Bridge	Mobility	Safety	Freight
<p>Pavement Index (PI): based on two pavement condition ratings from the ADOT Pavement Database. The two ratings are the International Roughness Index (IRI) and the Cracking Rating. The calculation of the Pavement Index uses a combination of these two ratings.</p>	<p>Bridge Index (BI): based on four bridge condition ratings from the ADOT Bridge Database. The four ratings are the Deck Rating, Substructure Rating, Superstructure Rating, and Structural Evaluation Rating.</p>	<p>Mobility Index (MI): an average of the current volume-to-capacity (V/C) ratio and the projected 2035 V/C ratio.</p>	<p>Safety Index (SI): combines the bi-directional frequency and rate of fatal incapacitating injury crashes, compared to crash occurrences on similar roadways in Arizona.</p>	<p>Freight Index (FI): a reliability performance measure based on the bi-directional planning time index for truck travel.</p>
<ul style="list-style-type: none"> ➤ Directional Pavement Serviceability – the weighted average (based on number of lanes) rating which measures the condition of the pavement in each direction of travel. ➤ Pavement Failure – the percentage of pavement area that is rated above the failure thresholds for IRI or Cracking, as established by ADOT Materials Group (IRI > 105 or Cracking > 15). 	<ul style="list-style-type: none"> ➤ Sufficiency – indicative of bridge sufficiency to remain in service. The factors that contribute to the Sufficiency Rating include structural adequacy and safety, serviceability and functional obsolescence, and essentiality for public use. ➤ % Functionally Obsolete – indicative of the percentage of deck area on bridges that is no longer functionally adequate for its current use, such as lack of shoulders or the inability to handle current traffic volumes. Functionally Obsolete does not directly relate to the structural adequacy. ➤ Bridge Rating – identifies the lowest rating on each segment. 	<ul style="list-style-type: none"> ➤ Directional Current V/C – the existing peak hour V/C ratio in both directions of the corridor. This measure provides an understanding of the directional operating characteristics of the corridor during the existing peak hour from a mobility congestion standpoint. ➤ Future V/C – a measure of the future 2035 V/C ratio that identifies how the corridor will operate in the future from a mobility congestion standpoint. ➤ Directional Closures – the average number of times a given location in the corridor was closed per mile in a specific direction of travel per year. ➤ Directional Travel Time Index (TTI) – the ratio of the average peak period travel time to the free-flow travel time. The TTI represents recurring delay along the corridor. ➤ Directional Planning Time Index (PTI) – the ratio of the total travel time needed for 95 percent on-time arrival to free-flow travel time. The PTI represents non-recurring delay along the corridor. ➤ % Non-single Occupancy Vehicle Trips (Non-SOV) – represents the percentage of trips that are taken by vehicles carrying more than one occupant. ➤ Bicycle Accommodation – represents the percentage of roadway that is accommodating for bicycle travel. 	<ul style="list-style-type: none"> ➤ % SHSP Emphasis Area – the percentage of fatal and incapacitating crashes that involve at least one of the five Strategic Highway Safety Plan (SHSP) Emphasis Areas on a given segment compared to the statewide average percentage of crashes involving at least one of the five SHSP emphasis Areas on roads with similar operating environments. ➤ Directional Safety Index – the combination of the directional frequency and rate of fatal and incapacitating injury crashes, compared to crash occurrences on similar roadways in Arizona. 	<ul style="list-style-type: none"> ➤ Directional Truck Planning Time Index (TPTI) – the ratio of total travel time (for trucks only) needed for 95 percent on-time arrival to free-flow travel time. The TPTI represents non-recurring delay along the corridor. ➤ Directional Truck Travel Time Index (TTTI) – the ratio of the average peak period travel time (for trucks only) to the free-flow travel time. The TTTI represents recurring delay that occurs along the corridor. ➤ Directional Closure Duration – the average time a given location in the corridor was closed per mile per year. ➤ Bridge Clearance – the minimum vertical clearance for all underpass structures within each segment as determined via the ADOT Bridge Database.

Figure 5: Performance Index Summary



3.1 Pavement

Based on the weighted average of the Pavement Index, the pavement on the corridor is in “good” condition. Overall, according to the Pavement Index, all but one segment of pavement is in “good” condition.

There are several failure hot spots along the corridor in Segments 6, 8, 11, 12, and 14, including 2 hotspots in Segment 14, which has a Pavement Index of Fair/Average. These hot spots were identified using methods described in Working Paper 2.

Thirteen percent of the pavement in Segments 6, 8, and 11 are in “fair/average” condition and 8% of the pavement in Segment 14 is in “fair/average” condition. The northbound and southbound pavements are nearly equal in condition, with the exception of a Fair/Average pavement PSR in southbound Segment 14.

Segment 14 has the lowest Pavement Index, and the lowest PSR in the southbound direction

3.2 Bridge

Overall, based on the weighted average of the Bridge Index, the bridges on the corridor are in “fair” condition. Additionally, according to the Bridge Index, nearly all of the individual bridges are in “fair” condition.

According to the bridge index, nearly all of the bridges are in “fair” condition

There are no structurally deficient bridges along the corridor. A bridge rating of 5 or 6 exists throughout the corridor.

There are no bridges in the corridor with a sufficiency rating of “poor”. There are no functionally obsolete bridges along the corridor. Segments 1, 3, 4, and 16 have the highest Bridge Index

3.3 Mobility

A thorough analysis of mobility on the corridor is described in Working Paper 2. Based on the overall weighted average of the Mobility Index, the traffic operations on the corridor are in “good” condition. The existing peak hour traffic operations are “good” as well. The future traffic operations are anticipated to perform “good” throughout the corridor, except in Segments 1 and 2 which perform “poor” and Segments 3 and 4 which perform “fair”.

A majority of the segments show “good” performance in the Closure performance measure. Segments 4 and 11 have the highest number of closures in the southbound direction and Segment 9 has the highest number of closures in the northbound direction. The TTI is generally “good” along the corridor except in the northbound Segment 11 which is “poor” and southbound Segment 3 which is also “poor”. The PTI measure shows a “good” performance for the majority of the segments, with “poor” measures in both directions of Segments 3, 7, and “poor” measures in the northbound direction of Segments 8 and 11.

All of the segments show a “fair” or “poor” performance for accommodation of bicycles except for Segment 11. A majority of the corridor shows “poor” or “fair” performance for non-SOV trips meaning that many vehicles carry only a single occupant, except for Segments 1, 11, and 12.

3.4 Safety

The weighted average of the Safety Index for the corridor as a whole shows an “average performance” condition. Nine of the segments perform either above average or average and the remaining seven are “below average performance” in the Safety Index.

Segments 3 and 13 perform below average in the Safety Index, top 5 SHSP emphasis areas, and both directions of travel for the safety index. Segments 2, 3, 12, and 13 perform below average in the top 5 SHSP emphasis areas. There are several locations of high crash frequency, including northbound in Segments 1, 3, 4, 5, 6, 10, 11, and 13, and southbound in Segments 3, 4, 9, 11, 13, 14, 15, and 16. These locations are identified using methodologies described in Working Paper 2.

3.5 Freight

The overall weighted average of the Freight weighted average shows that the corridor is in “fair” condition. In addition, Segments 3, 6, 7, 8, and 11 show “poor” performance in the Freight Index, TTI and PTI.

Based on results found in Working Paper 2, a majority of the segments show “good” performance in the closure performance measure. Eastbound Segments 4 and 11 and westbound segment 9 have the longest duration of closures. There are no vertical clearance restrictions on this corridor that cannot be by-passed by using ramps.

4.0 CORRIDOR PERFORMANCE GOALS AND OBJECTIVES

Corridor performance goals and objectives for the US 93/US 60 Corridor were developed, based on discussions with stakeholders within the corridor. Statewide goals and performance measures were established and published in the ADOT LRTP following an extensive statewide outreach program. Statewide goals relevant to the US 93/US 60 Corridor performance framework areas have been identified during preparation of the Working Paper. This effort has been coordinated with the corridor goals formulated for the five performance areas. The following corridor performance goals have been defined:

- Support goals identified in the What Moves You Arizona Long-Range Transportation Plan (LRTP).
- Improve mobility and connectivity.
- Provide a safe and reliable route for recreation and tourist travel.
- Provide safe, reliable, and efficient connection for all communities along the corridor to permit efficient regional travel.
- Provide a safe, reliable, and efficient freight route connection with I-40 and develop the corridor to fully accommodate its purpose under NAFTA.
- Maintain and preserve the highway infrastructure.
- Provide a safe and reliable route for all users.

Specific objectives have been developed for the US 93/US 60 Corridor to meet these performance goals:

- Maintain acceptable levels of service, particularly during seasonal peak periods.
- Reduce delays from non-recurring events (crashes, low-water crossings, flooding events) that close the roadway.
- Improve bicycle accommodation.
- Reduce delays and restrictions to freight movement to improve reliability.
- Improve travel time reliability in the both travel directions with consideration to potential impacts to motorists due to freight traffic.
- Maintain acceptable levels of pavement ride quality for all corridor users.
- Reduce fatal and serious injury crashes for all roadway users.

Table 4 shows the alignment of statewide and US 93/US 60 Corridor goals with these corridor objectives.

4.1 Stakeholder Input

The study team met with stakeholders at two separate meetings, one at the Central District (including the Maricopa Association of Governments [MAG]) on February 29, 2016; and one at the Northwest District (including Northern Arizona Council of Governments [NACOG] and Western Arizona Council of Governments [WACOG]) on March 4, 2016. The meetings were held to discuss the results of the performance evaluation in Working Paper 2 as well as help develop the goals and objectives for the corridor. A summary of these meetings in regards to the goals and objectives is presented in the subsequent section. Feedback provided on the US 93/US 60 corridor performance evaluation was documented in Section 5.0 of the Working Paper 2.

Input received during these meetings is summarized below by Performance Area.

Pavement Performance Area

- There is a planned pavement preservation project west of SR 303L. Why is the pavement rating 'good' instead of 'fair?' Inquiry was made to ADOT Pavement Management Section 03/07/2016 regarding upcoming project and pavement condition information.
- Pavement thought to be failing from US 93 MP 160-161 in the southbound direction. Reviewed data and verified the IRI and Cracking rating are consistent with the methodology and thresholds. The 2014-2015 data could possibly not accurately reflect current pavement conditions as it is more than six months old.
- Pavement thought to be failing at US 93 MP 129. Reviewed data and verified the IRI rating at US 93 MP 129 is 141.6895 and the failing threshold is 142.
- Pavement thought to be failing from US 93 MP 91-94. Reviewed data and verified the IRI and Cracking rating are consistent with the methodology and thresholds. The 2014-2015 data could possibly not accurately reflect current pavement conditions as it is more than six months old.

Bridge Performance Area

- Burro Creek SB Bridge (US 93 MP 139) was thought to be a hotspot instead of the NB Bridge. Reviewed data and confirmed the District's comment to be correct. It was confirmed that Burro Creek SB (US 93 MP 139), Morristown RR WB Bridge (US 60 MP 122), Date Creek Bridge (US 93 MP 174), and Big Sandy River NB Bridge (US 93 MP127) are not bridge hot spots because these bridges do not have a rating of 4 or multiple ratings of 5, based on current methodology.

Mobility Performance Area

- There are numerous driveways along US 60 and US 93 near the town of Wickenburg; the PTI is affected by heavy traffic on weekends and holidays; development near Surprise; and commuter traffic. Comments noted.
- Team was requested to evaluate the bicycle data on SR 303L; when the SR 303L opened in 2014, bicycle travel was restricted, which could be affecting the % Bicycle Accommodation performance. The calculations for bicycle accommodations on the US 60 corridor do not take into account actual bicycle travel volumes. We do not anticipate this to alter the results as shown.
- The difference in the northbound and southbound directions for road closures in Segment 5 (US 93 MP 166 to MP 183) and Segment 9 (US 93 MP 106 to MP 124) were questioned because these two segments are primarily undivided; closure performance rating should be similar for each direction. Reviewed closure data and an imbalance in the number of readings was identified for the southbound direction compared to the northbound direction. The directional reading with the greater number of reported closures was used to accurately reflect the nature of these two undivided segments. Tables and Figures were revised to show similar data for northbound and southbound for the primarily undivided segments.
- District suggested labeling the different operating environments per segment on Table 5 to clearly identify which segments are under the different thresholds. Labels were added to each of the segments throughout the report.
- A large difference between the northbound and southbound PTI in Segment 11 (US 93 MP 67 to MP 71) was noted and questioned. Reviewed data and verified the result is

consistent with the study methodology. The southbound PTI value of 2.85 is 0.15 of the threshold between performing “Good” and “Fair”.

Safety Performance Area

- District suggested labeling the different operating types for each segment on Table 6 to clearly identify which segments are under the different thresholds. Labels were added to each of the segments throughout the report.
- The “Above Average Performance” rating in Segment 9 (US 93 MP 106 to MP 124) for the Percentage of Fatal + Incapacitating Injury Crashes Involving SHSP Top 5 Emphasis Areas was noted and questioned because this area of the corridor experiences a large amount of crashes, primarily involving trucks. Reviewed data and 50% (3 out of 6) of the crashes in Segment 9 involved SHSP Top 5 Emphasis Areas, resulting in the rating. Truck accidents are not included in the 5 emphasis areas per the study methodology.
- The “Below Average Performance” rating in Segment 12 (US 93 MP 53 to MP 67) for the Percentage of Fatal + Incapacitating Injury Crashes Involving SHSP Top 5 Emphasis Areas was noted and questioned because this segment is performing “Above Average” for Safety Index in both directions. Reviewed data and 67% (8 out of 12) of the crashes in Segment 12 involved SHSP Top 5 Emphasis Areas, resulting in a “Below Average Performance” rating for the Percentage of Fatal + Incapacitating Injury Crashes Involving SHSP Top 5 Emphasis Areas.

Freight Performance Area

- Check with Northwest District on Segment 3 (US 60 MP 111 to MP 120) and Segment 4 (US 93 MP 183 to MP 200); these Segments were previously in the Prescott District. Meeting took place with Northwest District 03/04/2016.
- A difference in the reported road closures in the northbound and southbound directions for Segment 5 (US 93 MP 166 to MP 183) and Segment 9 (US 93 MP 106 to MP 124) was noted and questioned because these two segments are primarily undivided; closure performance rating should be similar for each direction. Reviewed closure data and an imbalance in the number of readings was identified for the southbound direction compared to the northbound direction. The directional reading with the greater number of reported closures was used to accurately reflect the nature of these two undivided segments. Tables and Figures were revised to show similar data for northbound and southbound for the primarily undivided segments.
- Segment 7 (US 93 MP 132 to MP 149) was identified to be an outlier with a TTI “Fair” performance rating while both Segment 6 and 8 have a “Good” performance rating. Reviewed data from the HERE Database and confirmed the analysis is correct. The variance in the results between Segments 7 and Segments 6/8 could be a result of the data collection process or difference in topography. No revisions were made to the reporting.
- A difference in the reported road closures for northbound and southbound directions for Segment 4 (US 93 MP 183 to MP 200) was noted and questioned because this segment is primarily undivided; the closure performance rating should be similar for each direction. Reviewed closure data and unlike Segments 5 and 9, there are a balanced number of readings for both north and southbound direction. The southbound direction could be experiencing a significantly higher duration of closures due to head-on and truck rollover related crashes. No revisions were made to the reporting.

4.2 Performance Emphasis Areas

Based on information from the ADOT Districts, MPOs, and COGs, the Mobility, Freight, and Safety Performance Areas were identified as critical performance areas for the US 93/US 60 Corridor. As such, the corridor objectives shown in Table 4 reflect an emphasis in these three performance areas.

4.3 Performance Objectives

Taking into account the corridor performance goals and identified “emphasis areas”, performance objectives were developed for each quantifiable performance measure that identify the desired level of performance based on the performance scale levels for the overall corridor and for each segment of the corridor. The performance objectives within each of the five performance areas are shown in **Table 4**.

The colors shown in **Table 4** represent the corresponding level of performance as described earlier, with green indicating “good” or “above average” performance and yellow indicating “fair” or “average” performance, and red indicating “poor” performance. Good/above average performance is the desired level of performance for the overall corridor primary measure for performance areas designated as “emphasis areas”.

Table 4: Performance Goals and Objectives

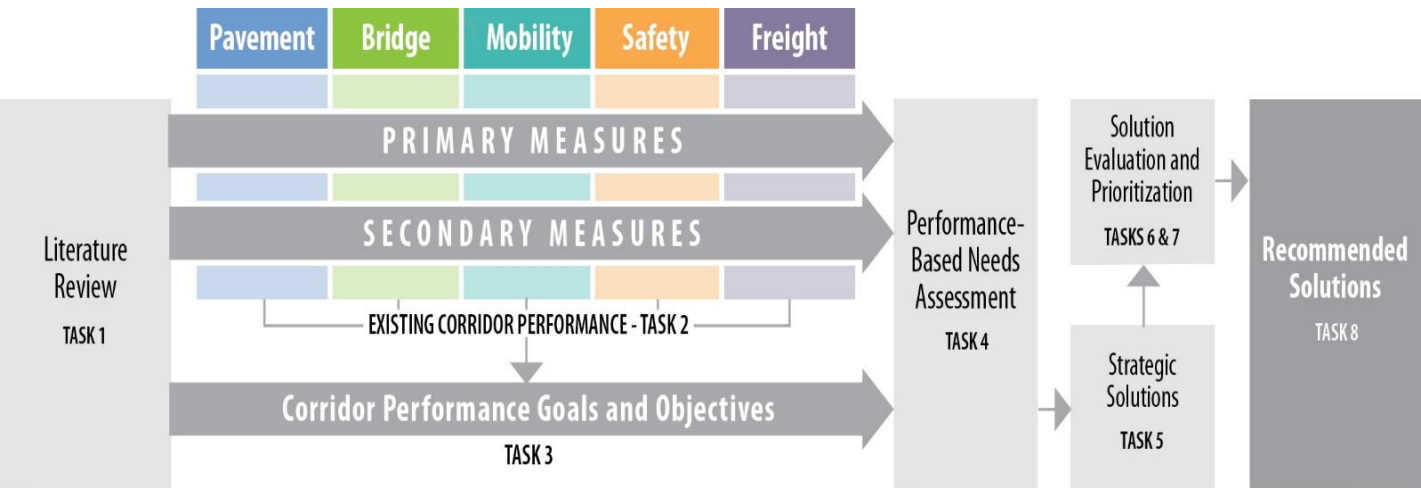
ADOT Statewide L RTP Goals	US 93/US 60 Corridor Goals	US 93/US 60 Corridor Objectives	Performance Area	Performance Measure	Performance Objective	
					Corridor Average	Segment
<div>Improve Mobility and Accessibility</div> <div>Support Economic Growth</div>	Improve mobility and connectivity Provide a safe and reliable route for recreation and tourist travel Provide safe, reliable, and efficient connection for all communities along the corridor to permit efficient regional travel	Maintain acceptable levels of service, particularly during seasonal peak periods	Mobility (Emphasis Area)	Mobility Index	Good	Fair or better
				Existing Directional Peak Hour V/C		Fair or better
				Future V/C		Fair or better
				Directional Closure Frequency		Fair or better
		Directional Travel Time Index			Fair or better	
		Directional Planning Time Index			Fair or better	
		Percent Non-SOV Trips			Fair or better	
		Percent Bicycle Accommodation			Fair or better	
	Provide a safe, reliable, and efficient freight route connection with I-40 and develop the corridor to fully accommodate its purpose under NAFTA	Reduce delays and restrictions to freight movement to improve reliability	Freight (Emphasis Area)	Freight Index	Good	Fair or better
		Improve travel time reliability with consideration to motorists due to freight traffic		Directional Travel Time Index		Fair or better
				Directional Planning Time Index		Fair or better
				Closure Duration		Fair or better
<div>Preserve and Maintain the State Transportation System</div>	Maintain and preserve highway infrastructure	Maintain acceptable levels of pavement ride quality for all corridor users	Bridge	Bridge Index	Fair or better	Fair or better
				Bridge Sufficiency Rating		Fair or better
				Bridge Rating		Fair or better
				% Deck Area on Function Obs Bridges		Fair or better
		Pavement	Pavement Index	Fair or better	Fair or better	
			Directional Pavement Serviceability		Fair or better	
			Percent Pavement Area Failure		Fair or better	
<div>Enhance Safety and Security</div>	Provide a safe and reliable route for all users	Reduce fatal and serious injury crashes for all roadway users	Safety (Emphasis Area)	Safety Index	Above Average	Average or better
				Percent SHSP Emphasis Areas		Average or better
				Directional Safety Index		Average or better

5.0 NEXT STEPS

The overall Corridor Profile Study process is shown in **Figure 6**. The process consists of eight tasks where the final results will provide candidate projects for P2P prioritization and inform the LRTP Update. The next step in the US 93/US 60 Corridor Profile Study will be to conduct a needs assessment based on the relationship between the existing performance and desired performance (Task 4). The corridor team will compare measured performance completed in Task 2 to the Corridor Objectives and Goals identified in this Working Paper 3 (Task 3). A “need” is identified when measured performance does not meet the expected performance objective.

The next deliverable, Working Paper 4, will report the findings from a needs analysis to help identify strategic improvements. The needs analysis will take a detailed look at the available data sets for each of the primary and secondary performance measures (including the “hot spots”). Following the needs assessment, “strategic solutions” will be developed to address the identified needs and improve performance (Task 5).

Figure 6: Profile Study Process



Task 1 assesses work already completed in the corridor through a literature review

Task 2 determines existing corridor performance based on data collected for the identified performance areas (pavement, bridge, mobility, safety and freight)

Task 3 develops long-term goals and objectives that define how the corridor can be expected to function, its primary purpose and performance emphasis areas

Task 4 assesses corridor needs by comparing existing conditions to expected performance

Task 5 formulates strategic candidate solutions to raise performance levels throughout the corridor with a focus on elevated need areas

Task 6 uses life-cycle cost analysis and benefit-cost analysis to determine the most cost-effective solution option

Task 7 determines performance effectiveness and risk factors for use in prioritizing solutions

Task 8 describes the recommended solutions using pre-scoping reports for future use in programming projects